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Have the symptoms of patients with COVID-19 changed over time during hospitalization?

Dear Editor,

Coronavirus disease 2019 (COVID-19) is an ongoing viral pandemic that started from China in December 2019 and rapidly spread to the other countries of the world. Iran was among the first countries, struggled with the COVID-19 epidemic, and Saveh was among the first cities, reporting the highest number of infected patients before March 15, 2020 [1]. There is no clear image of the spectrum of symptoms or severity of COVID-19. Common symptoms include fever, cough, weakness, and dyspnea. The less frequent symptoms include anorexia, diarrhea, pharyngalgia, abdominal pain, dizziness, headache, low level of consciousness, acute cerebrovascular disease, ataxia, neuralgia, fatigue, acute respiratory distress syndrome, sore throat, arthralgia, asthenia, rhinorrhea, sneezing, myalgia, vomiting, orbital pain, facial pain and fullness, nasal irritation, otalgia, cephalalgia, delirium, hoarse voice, hypogeusia, hyposmia, unilateral facial palsy, vertigo, and skin rash [2–6]. After assessing the exclusion criteria in 500 patients with COVID-19 (i.e., patients who were dead, lost to follow-up, or admitted to the intensive care unit), we recruited 100 patients with COVID-19, based on the laboratory-confirmed (reverse transcription polymerase chain reaction, RT-PCR) diagnosis of SARS-CoV-2 infection who had fever, dyspnea, non-productive cough, weakness, and myalgia at the time of admission. The subjects were admitted to Shahid Modarres Hospital in Saveh, Iran, between March 1, 2020 and April 1, 2020. We evaluated the most common clinical manifestations of patients (based on previous studies) during their hospitalization and one month after discharge. Also, we recorded the average date of the onset of symptoms from the first day of hospitalization until the 40th day, as shown in Fig. 1. Data were collected by trained staff during the patients' hospitalization and after one month. The mean age of the patients was 55 ± 11.8 years (ranged from 19 to 90 years), and the average length of hospital stay was ten days. About 58.6% (88 persons) were males. Treatment included oseltamivir and hydroxychloroquine, and if necessary, antibiotics were administered, according to the patient's condition. At the time of admission, all of our patients had fever, dyspnea, non-productive cough, weakness, and myalgia. After two days of hospitalization, the majority of the patients reported adding diarrhea and anorexia. After seven days of hospitalization, more than 60% of the patients reported olfactory and gustatory dysfunctions while they recovered from fever, dyspnea, myalgia, diarrhea and anorexia. Also, 80 and 70% of the patients reported continuing non-productive cough and weakness for one month after discharge, respectively. We reported in another study that the chief complaint of patients has changed at the time of admission by passing the time between March 1, 2020 and May 1, 2020 [7]. Based on the present results, the clinical manifestations of COVID-19 also have changed over time among patients during hospitalization. To the best of our knowledge, this is the first study, investigating the changes in each patient's symptoms over time since hospital admission. Further clinical studies are required to determine the changes in the patients' symptoms over time, as these changes may be related to the virus spread in different parts of the body, leading to the changes in each patient's symptoms over time.

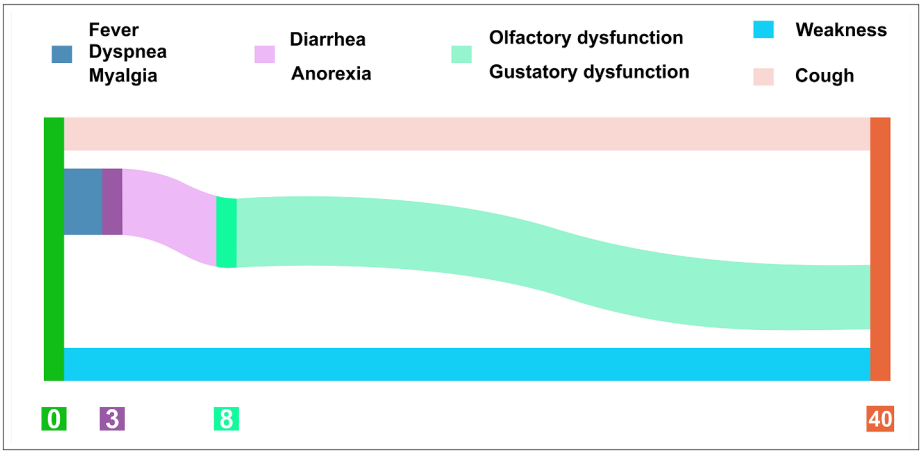

Fig. 1. Sankey diagram of clinical manifestations of patients (X-axis) with the onset of symptoms from the first day of hospitalization until the 40th day (Y-axis).

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Declaration of interest

The authors declare that they have no competing interest.

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Ethical approval

The research followed the tents of the Declaration of Helsinki. The Ethics Committee of Saveh University of Medical Sciences approved this study. The institutional ethical committee at Saveh University of Medical Sciences approved all study protocols (IR.SAVEHUMS.REC. 1399.005). Informed consent was obtained from all participants prior to the study.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.mehy.2020.110067.

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